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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/710,522	07/18/2004	Chung-Chih Chen	NAUP0598USA	4521

27765 7590 12/04/2007
NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION
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EXAMINER

TADAYYON ESLAMI, TABASSOM

ART UNIT	PAPER NUMBER
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1792

NOTIFICATION DATE	DELIVERY MODE
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12/04/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/710,522

Applicant(s)

CHEN, CHUNG-CHIH

Examiner

Tabassom T. Tadayyon-Eslami

Art Unit

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

The drawing is received on 10/08/2007. This drawing is appropriate.

Claim Interpretation

Claim 7 include sixth paragraph of 35 U.S.C. 112. The term "means for preventing" has been interpreted in light of the disclosure at [0023] as a sheet of foil. The term "light inhibiting means for transferring the wafer" has been interpreted as the foil sheet.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 7-11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed had possession of the claimed invention. The light inhibiting area that transfers the substrate (in addition to the foil as means to prevent the light) is not in disclosure.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 7-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Based on MPEP 2181.III and 2185, the term "first light inhibiting means for transferring" is unclear, because it invokes sixth paragraph of 35 U.S.C. 112, but the specification does not describe corresponding structure to perform the function. For the purpose of applying art, the light inhibiting means for transferring the wafer has been interpreted as at least inclusive of the same sheet of foil.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 7, 9 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Bryan C. Chung (U. S. Patent: 6361614), here after Chung.

Chung teaches,

A wafer cleaning system comprising a wet cleaning tool for performing a wafer cleaning tool for performing a wafer cleaning process [column 2, line 37] and a light inhibiting means for preventing a wafer to be cleaned from light exposure during said wafer cleaning process [column 3, line 3] (from entering the wafer to the chamber it gives at least partial shadowing which is light blocking).

Art Unit: 1792

Claim 9 is rejected. Chung teaches the said wet processing tool is a single – wafer-cleaning tool [claim 5].

Claim 11 is rejected. Chung teaches the said wafer is a semiconductor wafer [column 3, line 11].

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-6, 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bryan C. Chung (U. S. Patent: 6361614), here after Chung further in review of A.

* Beverina et. al. "Copper Photocorrosion phenomenon during Post CMP Cleaning", Electrochemical and Solid-State Letters, Vol. 3(2000)156, here after Beverina.

Chung teaches,

a method of wafer cleaning [column 2, line 33], comprising:

Providing a wet cleaning tool [fig. 1 and column 3, line 30].

Transferring the wafer into said wet cleaning tool in a light inhibited manner [column 3, line 30] (such as from the entering to the chamber gives at least partial shadowing; that is light blocking); and

Cleaning said main surface of said wafer by contacting a cleaning solution in said light inhibited manner [column 2, line 37].

Art Unit: 1792

Chung does not specifically teach the wafer comprises exposed copper feature and a dielectric film. Beverina teaches,

A wet cleaning process [abstract, line 1], comprising;

Preparing a wafer having a main surface comprising at least one exposed copper feature and a dielectric film [page 156, line 5] and eliminating the light eliminates the corrosion [abstract, line 4].

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of wet cleaning that Chung teaches on the wafer structure that Beveria teaches, because Beveria teaches eliminated the light during the cleaning step eliminates the corrosion. Therefore, it is suitable to use Chung's method to eliminate the light during the processing.

Claim 2 is rejected since Chung teaches the wafer is a semiconductor [column 3, line 11].

Claim 3 is rejected. Chung and Beveria teach the limitation of claim 1. Beveria further teaches the exposed copper feature is damascened into said dielectric film [page 156, column 1, and line 6]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of wet cleaning that Chung teaches on the wafer structure that Beveria teaches, because Beveria teaches eliminated the light during the cleaning step eliminates the corrosion on copper feature into the said dielectric layer.

Claim 4 is rejected. Chung and Beveria teach the limitation of claim 1 and Chung further teaches the wafer is not exposed to the light during the step of cleaning process [column 3, line 13].

Claim 5 is rejected. Chung teaches the tool comprises a succession of sinks containing cleaning solution [column 1, line 41].

Claim 6 is rejected. Chung teaches the said wet processing tool is a single – wafer-cleaning tool [claim 5].

Claim 8 is rejected. Chung teaches the limitation of claim 7 and he further teaches the tool comprises a succession of sinks containing cleaning solution [column 1, line 41].

Claim 10 is rejected. Chung teaches the limitation of claim 7. Chung does not teach the exposed copper feature is damascened into said dielectric film. Beveria further teaches the exposed copper feature is damascened into said dielectric film [page 156, column 1, line 6]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of wet cleaning that Chung teaches on the wafer structure that Beveria teaches, because Beveria teaches eliminated the light during the cleaning step eliminates the corrosion on copper feature into the said dielectric layer.

Response to Argument

Applicant's arguments filed on Oct. 08, 2007 have been fully considered but they are not persuasive. Applicant argues on the route and during the process of transporting

the wafer to the wet cleaning tool the light is blocked from the wafer, because of the moisture in the air will induce copper corrosion. However the applicant does not claim that moisture in the air will induce copper corrosion. U. S. Patent: 6361614, here after Chung, teaches that the light is prevented from entering to the processing chamber by welding, screwing or nailing the light blocking material to the chamber [column 4 lines 6-10] and so it will remain during the transferring wafer to the chamber. The foil of Chung inherently at least partially blocks the incoming light.

Conclusion

Applicant amendment necessitated the new ground (s) of rejection presented in this office action Accordingly, **THIS ACTION IS MADE FINAL**. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tabassom T Tadayyon-Eslami whose telephone number is 571-270-1885. The examiner can normally be reached on 7:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

T.T


MICHAEL CLEVELAND
SUPERVISORY PATENT EXAMINER